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EXAMINER

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/711,818	Applicant(s) MURPHY ET AL.	
	Examiner Rodney G. McDonald	Art Unit 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>10/07/04, 3/14/05</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 11, 12, 26, 27 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 11 and 27 are indefinite because of the phrase “other electrically conductive magnetic materials”. It is unclear what “other” encompasses.

Claims 12 and 26 are indefinite because the phrase “other electrically conductive materials”. It is unclear what “other” encompasses.

Claim 29 is unclear because it depends on claim 15 which is a method claim. Should it depend on claim 16?

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 5, 6, 8-11, 16-18, 20, 21 and 23-26 are rejected under 35 U.S.C. 102(b) as being anticipated by Nakamura et al. (01-147063).

Regarding claim 1, Nakamura et al. teach a method of sputter deposition. Nakamura et al. teach providing a sputter target having a back surface and an exposed

front surface. Nakamura et al. teach providing a source of magnetic field lines (2a, 3, 2b, 1), the magnetic field lines extending through the sputter target from the back surface to the exposed front surface of the sputter target. Nakamura et al. teach providing one or more pole extenders (11a-11c) between the magnetic poles of the source of the magnetic field lines and the exposed front surface of the sputter target. (See Abstract, Figs 1-2)

Regarding claim 2, Nakamura et al. teach positioning the one or more pole extenders to increase a distance of the magnetic field lines extend from the magnetic poles of the magnetic source in a direction of the exposed front surface of the sputter target to improve utilization of the target. (See Abstract; Figs. 1-2)

Regarding claim 3, Nakamura et al. teach positioning the one or more pole extenders to increase the length of the magnetic field lines that are parallel to the exposed surface of the sputter target. (See Abstract; Figs. 1-2)

Regarding claim 5, Nakamura et al. teach providing a backing plate 10 having a back surface and a front surface, the front surface of the backing plate in direct physical contact with the back surface of the sputter target. (See Abstract; Figs. 1-2)

Regarding claim 6, Nakamura et al. teach the one or more pole extenders contained within the backing plate. (See Abstract; Figs. 1-2)

Regarding claim 8, Nakamura et al. teach the sputter target to be a disk and the one or more pole extenders are rings or disks. (See Abstract; Figs. 1-2)

Regarding claim 9, Nakamura et al. teach centering the one or more pole extenders about extenders about an axis perpendicular to the back surface of the

sputter target and running through the geometric center of the sputter target. (See Abstract; Figs. 1-2)

Regarding claim 10, Nakamura et al. teach the one or more pole extenders to be flat surfaces. (See Abstract; Figs. 1-2)

Regarding claim 11, Nakamura et al. teach the pole extenders to comprise a magnetic material. (See Abstract)

Regarding claim 16, Nakamura et al. teach an apparatus for sputtering. Nakamura et al. teach a sputter target having a back surface and an exposed front surface. Nakamura et al. teach a source of magnetic field lines, the magnetic field lines extending through the sputter target from the back surface to the exposed front surface of the sputter target. Nakamura et al. teach one or more pole extenders between magnetic poles of a source of the magnetic field lines and the exposed front surface of the sputter target. (See Abstract; Figs. 1-2)

Regarding claim 17, Nakamura et al. teach positioning the one or more pole extenders to increase a distance of the magnetic field lines extend from the magnetic poles of the magnetic source in a direction of the exposed front surface of the sputter target to improve utilization of the target. (See Abstract; Figs. 1-2)

Regarding claim 18, Nakamura et al. teach positioning the one or more pole extenders to increase the length of the magnetic field lines that are parallel to the exposed surface of the sputter target. (See Abstract; Figs. 1-2)

Regarding claim 20, Nakamura et al. teach providing a backing plate 10 having a back surface and a front surface, the front surface of the backing plate in direct physical contact with the back surface of the sputter target. (See Abstract; Figs. 1-2)

Regarding claim 21, Nakamura et al. teach the one or more pole extenders contained within the backing plate. (See Abstract; Figs. 1-2)

Regarding claim 23, Nakamura et al. teach the sputter target to be a disk and the one or more pole extenders are rings or disks. (See Abstract; Figs. 1-2)

Regarding claim 24, Nakamura et al. teach centering the one or more pole extenders about an axis perpendicular to the back surface of the sputter target and running through the geometric center of the sputter target. (See Abstract; Figs. 1-2)

Regarding claim 25, Nakamura et al. teach the one or more pole extenders to be flat surfaces. (See Abstract; Figs. 1-2)

Regarding claim 26, Nakamura et al. teach the pole extenders to comprise a magnetic material. (See Abstract)

Claims 1-3, 5, 7, 10, 16-18, 20, 22 and 25 are rejected under 35 U.S.C. 102(b) as being anticipated by Sudo (Japan 60-89571).

Regarding claim 1, Sudo teaches a method of sputter deposition. Sudo teaches providing a sputter target having a back surface and an exposed front surface. Sudo teaches providing a source of magnetic field lines (9, 8a-8b), the magnetic field lines extending through the sputter target from the back surface to the exposed front surface of the sputter target. Providing one or more pole extenders (12) between magnetic

poles of the source of the magnetic field lines and the exposed front surface of the sputter target. (See Abstract; Fig. 5)

Regarding claim 2, Sudo teaches positioning one or more pole extenders to increase a distance of the magnetic field lines extend from the magnetic poles of the magnetic source in a direction of the exposed front surface of the sputter target. (See Abstract)

Regarding claim 3, Sudo teaches positioning one or more pole extenders to increase lengths of magnetic field lines that are parallel to the exposed surface of the sputter target. (See Abstract)

Regarding claim 5, Sudo teaches providing a backing plate having a back surface and a front surface, the front surface of the backing plate in direct physical contact with the back surface of the sputter target. (See Fig. 5)

Regarding claim 7, Sudo teaches providing one or more pole extenders contained within the sputter target and second corresponding and integral portions of the one or more pole extenders contained within the backing plate. (See Fig. 5)

Regarding claim 10, Sudo teaches the pole extenders having a combination of flat and slanted portions. (See Fig. 5)

Regarding claim 16, Sudo teaches a sputtering apparatus. Sudo teaches a sputter target having a back surface and an exposed front surface. Sudo teaches a source of magnetic field lines, the magnetic field lines extending through the sputter target from the back surface to the exposed front surface of the sputter target. One or

more pole extenders between the magnetic poles of a source of the magnetic field lines and the exposed front surface of the sputter target. (See Abstract; Fig. 5)

Regarding claim 17, Sudo teaches positioning one or more pole extenders to increase a distance of the magnetic field lines extend from the magnetic poles of the magnetic source in a direction of the exposed front surface of the sputter target. (See Abstract)

Regarding claim 18, Sudo teaches positioning one or more pole extenders to increase lengths of magnetic field lines that are parallel to the exposed surface of the sputter target. (See Abstract)

Regarding claim 20, Sudo teaches a backing plate having a back surface and a front surface, the front surface of the backing plate in direct physical contact with the back surface of the sputter target. (See Abstract)

Regarding claim 22, Sudo teaches providing one or more pole extenders contained within the sputter target and second corresponding and integral portions of the one or more pole extenders contained within the backing plate. (See Fig. 5)

Regarding claim 25, Sudo teaches the pole extenders having a combination of flat and slanted portions. (See Fig. 5)

Claims 1, 4, 12, 16, 19 and 27 are rejected under 35 U.S.C. 102(b) as being anticipated by Hurwitt et al. (U.S. Pat. 4,957,605).

Regarding claim 1, Hurwitt et al. teach a method of sputter deposition. Hurwitt et al. teaches providing a sputter target having a back surface and an exposed front surface. Hurwitt et al. teach providing a source of magnetic field lines, the magnetic

lines extending through the sputter target from the back surface to the exposed front surface of the sputter target and providing one or more pole extenders 48 between magnetic poles of the source of the magnetic field lines and the exposed front surface of the sputter target. (See Fig. 1; Column 7 lines 44-61; Column 9 lines 14-61)

Regarding claim 4, Hurwitt et al. teach the pole extender 48 contained within the sputter target. (Column 9 lines 14-61; Fig. 1)

Regarding claim 12, Hurwitt et al. teach that the material of the target can be electrically conductive material. (Column 1 lines 50-52)

Regarding claim 16, Hurwitt et al. teach an apparatus for sputter deposition. Hurwitt et al. teaches providing a sputter target having a back surface and an exposed front surface. Hurwitt et al. teach providing a source of magnetic field lines, the magnetic lines extending through the sputter target from the back surface to the exposed front surface of the sputter target and providing one or more pole extenders 48 between magnetic poles of the source of the magnetic field lines and the exposed front surface of the sputter target. (See Fig. 1; Column 7 lines 44-61; Column 9 lines 14-61)

Regarding claim 19, Hurwitt et al. teach the pole extender 48 contained within the sputter target. (Column 9 lines 14-61; Fig. 1)

Regarding claim 27, Hurwitt et al. teach that the material of the target can be electrically conductive material. (Column 1 lines 50-52)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 1795

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 13 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakamura et al. (01-147063) or Sudo (Japan 60-89571) or Hurwitt et al. (U.S. Pat. 4,957,605) in view of Arita (Japan 03-257161).

Nakamura et al. or Sudo or Hurwitt et al. is discussed above and all is as applies above. (See Nakamura et al. or Sudo or Hurwitt et al. discussed above)

The differences between Nakamura et al. or Sudo or Hurwitt et al. and the present claims is that coating the extenders with anti-chemical or anti-galvanic corrosion layer

Regarding claims 13, 28, Arita teaches forming a layer of alumina on the pole extenders. (See Arita Abstract)

The motivation for utilizing the features of Arita is that it allows for widening the erosion region. (See Abstract)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the features of Nakamura et al. or Sudo or Hurwitt et al. with Arita because it allows for widening the erosion region.

Claims 14, 15, 29 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakamura et al. (01-147063) or Sudo (Japan 60-89571) or Hurwitt et al. (U.S. Pat. 4,957,605) in view of Kobayashi et al. (U.S. Pat. 5,944,968).

The differences not yet discussed is the rotating of the permanent magnets (Claims 14, 29) and the rotating permanent magnets rotating about an axis of rotation that is parallel to and offset from an axis perpendicular to the back surface of the sputter target and running through the geometric center of the sputter target is not discussed (Claims 15, 30).

Regarding claims 14, 29, Kobayashi et al. teach rotating permanent magnets located on the back of a target. (See abstract)

Regarding claims 15, 30, Kobayashi et al. teach rotating permanent magnets rotating about an axis of rotation that is parallel to and offset from an axis perpendicular to the back surface of the sputter target and running through the geometric center of the sputter target. (Column 4 lines 39-50)

The motivation for utilizing the features of Kobayashi et al. is that it allows for depositing uniform thin films. (See Abstract)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Nakamura et al. or Sudo or Hurwitt et al.

by rotating the magnets behind the target as taught by Kobayashi et al. because it allows for depositing uniform thin films.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rodney G. McDonald whose telephone number is 571-272-1340. The examiner can normally be reached on M-Th with every Friday off..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam X. Nguyen can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Rodney G. McDonald/
Primary Examiner, Art Unit 1795

Rodney G. McDonald
Primary Examiner
Art Unit 1795

RM
March 26, 2008